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X.—*On the Classification of the Races of Man according to the Form of the Skull.* By JOHN CRAWFURD, Esq., F.R.S.

[*Read April 9th, 1867.*]

THE classification of the races of man according to the form of the skull began with the celebrated anatomist and naturalist Blumenbach, who published an account of it in 1775. Blumenbach considered all mankind to consist of a single species, which he called the Caucasian, under the belief that the most perfect type of man was to be found among the inhabitants of the Caucasus, a gratuitous assumption without the shadow of foundation. From this imaginary primitive stock, four varieties, which he denominates the Mongolian, the Ethiopian, the American, and the Malayan, have, according to his hypothesis, proceeded, through a process of degeneration. But, as these five classes would not include many races of man known even in the time of Blumenbach, he supposes mixed races formed by the union of the five principal ones, much after the manner in which the four primary castes of the Hindus have been multiplied to hundreds. The late Dr. Prichard added two races to Blumenbach's five, without at all improving his arrangement.

The theory of Blumenbach and his followers appears to me to be in no respect founded in nature, but, on the contrary, to be entirely arbitrary, and, as a test to distinguish the races of man, practically useless, and even delusory.

If the primary white stock, or Caucasian of the theory, became black in one quarter of the world, tawny in a second, yellow in a third, and copper-coloured in a fourth, we ought to have been told how these and other great alterations of physical form were brought about; but the author of the theory and his disciples are silent on the subject, contenting themselves with the unproved assertion that they have been the results of degeneration. From the little that we do know of the history of the human race, man has undergone no change in form or complexion for some five thousand years; and, therefore, the upholders of the Blumenbach theory must go to an unknown and unknowable antiquity for the origin of their varieties.

But what, after all, is the skull, that it should be considered to yield a character to distinguish the many races of man from one another? It is simply a portion of the skeleton, or hard rigid frame, which contains or sustains the soft fleshy parts of the animal economy which perform all the functions of life, but

which itself performs none of them. We can easily imagine all the functions of life, except motion, to go on without the bony frame, and in sleep they actually do so; while among several of the lower orders of the animal creation there is no skeleton at all. We may, if we please, consider the human skull as the noblest part of the skeleton, since it is the receptacle of the brain, or organ of thought; but still, it is no part of the brain itself, any more than is the casket the jewel of which it is the receptacle, since the casket may be of any shape or any material, without giving the least indication of the quality of the jewel.

The human skull is of no definite form, for it can only be described as irregularly subglobular. Besides being the seat of the brain, it is also the solid seat of the organs of hearing, seeing, smell, taste, and of the face itself, while it embraces the machinery for the mastication of food.

It is difficult to understand how the skull came to be selected for a test of race, unless it were on account of its being the most striking portion of the skeleton, and the facility and convenience with which a collection of crania could be accommodated in a museum. The founder of the skull theory possessed such a collection; and it has often occurred to me, that it was the frequent contemplation of it that first suggested to him a principle of classification which had never before occurred to anyone else.

To give an accurate and intelligible definition of an object so irregular and inconstant as the human skull was, of course, impossible; and Blumenbach's definition of the forms of his five classes are so utterly vague, that they might, with equal correctness, be applied to the skulls of a like number of the canine or simian families. Thus, in his primitive class, the Caucasian, the skull is described as "subglobular," in the Mongolian as "almost square," in the Ethiopian as "compressed at the sides with a knotty forehead;" while with the American variety, "the forehead is short and always broad," and with the Malayan, "the skull is moderately narrowed, with a forehead slightly swelling." The man who was content with such definitions as these must have entertained but a dreamy notion of the difference of form in skulls.

The impossibility of distinguishing the races of man, by Blumenbach's vague characters of the skull, was in time found out; and a new test, in my opinion just as unsatisfactory, has been invented, called the "Cephalic Index;" and I take my account of it from the highest authority I can quote on the subject—the skilful, ingenious, and eloquent Professor Huxley, who describes it, with its most recent modifications and im-

provements, in his account of "The Prehistoric Remains of the Kists of Caithness." By this test, all skulls are divided into two classes, the "long" and the "short." Skulls of which the longitudinal diameter exceeds the transverse in a certain proportion, are to be classed as "long," and to be designated by the Greek term "dolichocephalic;" and all that fall short of that proportion are to be classed as "short," having the Greek term "brachycephalic." The inventor of the "Cephalic Index" was the late distinguished Swedish professor, Retzius. It is singular, however, that the very inventor himself could not make up his mind at what point the long class should commence and the short one end. Speaking generally, however, he came to the conclusion, that when the longitudinal diameters exceeded the transverse by about one-fourth part, the skull should be classed as "long," or "dolichocephalic;" while if the excess did not exceed one-eighth or one-fifth, it should be classed as "short," or "brachycephalic." This was at once vague and arbitrary; but the followers of Retzius have attempted to give more precision to the Cephalic scale, and fix it at 8 decimal, making all skulls of which the longitudinal exceeds the transverse diameter beyond this figure to be "long" or "dolichocephalic," and all that fall short of it "round" or "brachycephalic." This means that the length is, in proportion to the breadth of the skull, as 100 to 80, or exceeds it by one-fifth part; while the inventor of the scale makes the proportion only as 100 in 75, or a fourth instead of a fifth part. The amenders of the Cephalic scale have subdivided it into no fewer than eight grades, three of them being short or brachycephalic, and five long or dolichocephalic.

The very terms in which the Cephalic Index is described proclaim it to be most dogmatically arbitrary and conventional, since a mere ideal line separates the round from the long skulls. The savages, who compress the occipital parts of their infants' heads, can convert long heads into short heads, and, in fact, have been in the habit of doing so for ages, without producing any appreciable change in body or mind.

The Cephalic Index, it is certain, would reduce all mankind to two classes—the brachycephalic or short heads, and the dolichocephalic or long heads; the only difference between them being in the degree in which skulls were respectively more or less short, or more or less long.

But the theory seems to me completely overthrown by the fact that, among most of the races of man, skulls are found of both descriptions. Of the seven skulls found in the kists of Caithness, and so carefully and skilfully described by Professor Huxley himself, five turned out (as tested by the Cephalic

scale) to be short, and five to be long. Now, the great likelihood is, that these skulls belonged to one and the same race of man, and, not improbably, that some of them belonged even to members of the very same family. Professor Huxley, in his description of the Caithness remains, refers to the examination, by eminent Swiss and German naturalists, of many Swiss and German skulls—ancient, middle-age, and modern; and I gather from it, that three-fourths of them come under the designation of short, while the remaining fourth belongs to the long heads.

The collection of skulls of the Academy of Natural Sciences of Philadelphia amounts to 575 crania of the aborigines of every part of the American continent; and they have been carefully examined by an experienced craniologist, Dr. Meigs. Among these are 245 Peruvian skulls, which afford, in my opinion, a very satisfactory refutation of the Cephalic scale. Of this number, 168 are brachycephalic or short-headed, 50 are dolichocephalic or long-headed; while 27 are mesocephalic, or neither the one nor the other, but an indeterminate form between the two, and to which the Cephalic scale is necessarily inapplicable. Such, then, is the disparity in the form of the skull tried by the Cephalic Index, with a people deemed to be of one and the same race, and generally speaking one and the same language. Thus the Cephalic test makes about 68 per cent. of the Peruvian skulls long, about 20 per cent. short, and about 11 per cent. indescribable.

The skulls of the African Negro give a predominance of long skulls, or dolichocephalic. On the other hand, the few skulls of the Andaman Negro that have been examined have turned out to be all short, or brachycephalic. The only race of man with whom the dolichocephalic or long skull is universally present is the Australian—a people widely different from the rest of mankind, bodily and mentally.

The predominant skull of the Malay, that is, of the people speaking such languages as Malay and Javanese, is short or “round;” but those of the Dayaks of Borneo—heretofore considered to be the same race of man, and certainly not distinguishable from them when they have been converted to the Mahomedan religion, and assumed the dress and manners of Malays—are pronounced to be “long.” The prevalent skull of the tropical Polynesian, as in the example of the Tahitians and Hawaiians, is pronounced to be “short;” whereas those of the New Zealanders, certainly descended from, and not distinguishable from them in any other physical form, are pronounced to be “long.” The skulls of the Hindu-Chinese are “short,” but so are the skulls of the Chinese, who are, bodily and mentally, a widely different race of man.

The value of the Cephalic scale may be judged by the wild deductions which its very author drew from its application. Prof. Retzius entertained the groundless speculation that the New World was peopled from the Old, although, but for the migration which was necessary to bring this about, there does not exist an iota of evidence, the savages who are imagined to have achieved the exploit being, by nature and necessity, almost as immovable as the plants and creeping animals of the lands they dwelt in. Dr. Meigs, himself a believer in the Cephalic scale, gives the following account of Professor Retzius' opinions on this subject. He traced, he says, the races of the New World, which he reckons to be three in number, to those of the Old, by the relative breadth to the length of the skull. The Esquimaux have brachycephalic or short heads, and so have the Chinese, and therefore Retzius concluded that the Esquimaux are of Chinese origin—the imaginary connecting link, in this case, being the Aleutian Islands. He concluded that the short-headed Americans, dwelling on that side of the continent which points to Asia and its islands, are of Mongolian origin; while he traced a connection between the dolichocephalic or long-headed Indians of that portion of America, to the extinct Guanches of the Canary Islands, to the Mauritians, the Tuariks, and the Egyptians—races palpably different being thus made one through the magic virtue of the Cephalic scale! In adopting these most extravagant deductions of Professor Retzius, Dr. Meigs seems to have forgotten that he had previously examined, by the Retzius scale, the skulls of twenty-seven different Indian tribes, of North and of South America, as well of the eastern as of the western side of the continent, and that everywhere short skulls were found as well as long ones, although the latter were the most prevalent.

As a test for distinguishing the races of man, the relative length and breadth of the skull seems to me, in short, to be of no more value than would be the relative breadth across a man's shoulders to his stature, or of the breadth to the length of his foot. The length of the heel-bone of an African Negro is better evidence of his race than the narrowness of his skull.

The natural families of the lower animals are readily distinguished from one another by the form of the skull, the face included, and so is man from all other animals; but no one has attempted to distinguish the species of the lower animals by the skull, although their species are far more distinct from each other than are the races of man. On the contrary, the species of the same family of the lower animals are often so alike, that it is impossible to distinguish them from each other by their skulls, while it is easy to do so from their external characters,

and to find words to describe the difference. Thus, there are no characters sufficiently distinct to enable us to distinguish between the skull of the horse and that of the ass, or, indeed, between the skulls of any two of the equine family. The skull of the wild dog of India and of the dingo of Australia are not distinguishable from the skull of several species of wolf, of fox, and of jackal; but it is very easy to distinguish the living animals, by their external form, their coats, and their habits. It is not necessary to be a naturalist to enable one to say which is a lion, a tiger, a leopard, and a panther; but by their naked skulls they are not distinguishable. When the skeleton of a large fossil feline is exhumed in Europe—an animal which was the contemporary of an elephant and a rhinoceros, and fed on wild hogs and reindeer—one cannot tell whether it belonged to a lion, a tiger, or a leopard. The skull of the domestic cat itself is but that of a miniature lion or tiger. The brown bear, the grisly bear, and the white bear of the Arctic Circle are very distinct species, but they are not distinguishable by the form of their skulls.

How unavailable the form of the skull is as a criterion of the race of man it is easy to show. The Greeks, the Persians, and the Hindus have skulls which no one pretends to distinguish, and, in fact, their very similarity has been adduced as an argument to show that these three peoples, differing so widely from one another in complexion and mental endowment, are of one and the same race of man—one of the absurd and fallacious conclusions of the linguistic theory. The Hindu and the Arab are, indisputably, two distinct races, but no one will assert that there is an appreciable difference in the form of their skulls; and so it is as between the skull of a Chinese, a Mongol, a Tibetan, a Japanese, a Hindu-Chinese, and a Malay—all very different races of the human family.

Neither is the form of the skull to be relied on as a criterion of the intellectual capacity of the party to which it belonged. A great anatomist and naturalist has mistaken the skull of a Scotch sergeant for that of an African Negro, although the owner of the former, from his position, must have been above the level of his countrymen, and the owner of the last most probably not above the level of his. Lately there was exhibited, at the meeting of a scientific society which attaches a high value to naked skulls as a test of race, the skull of a Negro: it was that of a Kruman, one of the most docile and intelligent of the African Negroes, and frequently employed by European shipping on the pestilential West Coast in the performance of fatigue-duties. It was examined by a craniological adept, who pronounced it "a very debased skull as regarded its animal

characters ; it was almost of as low a grade as the skull of man could attain." The party who presented the skull, and who knew the owner of it in life, happened to be present, and quietly observed that the skull, "whatever might be its characteristic developments, was that of an intelligent man, who had a very good temper," adding that "the Krumen are considered the most intelligent of the Negro tribes."

From the examination which I have now made, I must come to the conclusion that Blumenbach's theory, notwithstanding all the emendations which it has received, is still nothing better than a groundless hypothesis. As a branch of physical science, a classification of the races of man ought to have been founded on a large assemblage of facts, on which, by induction, a general principle might be established. Blumenbach pursued the very opposite course ; for he formed his theory first, and then pressed the few facts he possessed into an agreement with it. Humboldt, in his *Cosmos*, points out this error in the system of Blumenbach and his successors. But Humboldt was a travelled naturalist, who had had experience of many races of man ; while Blumenbach, however eminent his abilities, wanted all travelled experience, and seems to have founded his theory chiefly on the skulls in his own cabinet. The very names which he and his followers give to the classes into which they divided all mankind embrace, each of them, an erroneous and misleading generalisation.

Let a score of human skulls, indiscriminately taken, be submitted to the examination of the most skilful and experienced anatomist ; and although he may now and then make a happy hit, it will defy him to distinguish them, generally, with any certainty. He will find among them, more or less long, and more or less round skulls, with more or less elevated nasal bones, and skulls with superciliary ridges more or less prominent. Such vague and ill-defined characters belong equally to several widely different races of man. Ordinary observers distinguish, without any difficulty, the skull of an infant from that of an adult, and the skull of an adult from that of an old person : we distinguish generally a female from a male skull, but in these cases the characters are usually strong and well-marked. It is the reverse with the alleged characters of the skulls of races, which are so vague and indeterminate as to be utterly beyond the power of discrimination. With the lower animals which make the nearest approach to each other, we do not even pretend to distinguish species by the form of the skull, while we readily do so by the hairy tegument—a resource which is wanting to us in man ; since with him, the hair of the head, the breast, and body, are often undistinguishable as to quantity,

colour, and texture. If we add to these difficulties the perplexity introduced by commixture of races, and by the fact that man, of whatever race, has been, ever since he acquired the art of communicating his ideas in articulate language, learned the art of kindling a fire, and of fashioning a club—a domestic animal himself, and, as such, subject, more or less, to the varieties which arise from domestication, the impossibility of distinguishing race by the naked skull must appear wholly insurmountable. I conclude, then, that the classification of Blumenbach, notwithstanding the amendments of his followers, has, after a trial approaching to a century, proved wholly abortive, and that it is high time it were abandoned as a hopeless hypothesis.
